## REMARKS

Claims 1-15, 17-37, and 66 are pending. The Examiner has withdrawn from consideration claims 4-7, 12-13, 19, 21, and 38-63. By this Amendment, the drawings, specification, and claims 1-10, 15, 17, 23-25, 28-30, and 33-37 are amended, claims 16 and 38-65 are canceled without prejudice or disclaimer, and claim 66 is added. Non-elected claims 38-63 have been canceled to expedite prosecution of the application. The drawings are amended to correct inconsistencies with the specification. No new matter is added. The specification is amended to correct informalities. No new matter is added. Support for the claims can be found throughout the specification, including the original claims, and the drawings. Reconsideration in view of the above amendments and following remarks is respectfully requested.

The Examiner is thanked for the courtesies extended to Applicant's representative at the January 23, 2004 personal interview. In the personal interview, no agreement was reached although various possible limitations to various claims were discussed.

The Office Action rejected claims 1-3, 6, 8-11, 14-18, 20, 22-37, and 64-65 under 35 U.S.C. §102(b) as being anticipated by the Tam reference. Claims 16 and 64-65 are canceled. The rejection is respectfully traversed in so far as it applies to the remaining claims.

The Tam reference is a general research paper from 1991 that looks at general laser cleaning techniques for removal of surface particulates. The Tam reference first examines dry laser cleaning and then examines steam laser cleaning, comparing the efficiency of the two cleaning techniques. In the steam laser cleaning section, the Tam reference examines particle

removal using strong substrate absorption, strong liquid-film absorption, which Tam dismisses as less effective than strong substrate absorption, and partial absorption by substrate and liquid film. In each case, the Tam reference discusses a single example in which a uniform 1 μm thick layer of water was utilized. See pages 3518-3520 of the Tam reference.

In contrast, Applicant has discovered, as evidenced in the present application, that by selecting laser energy transfer parameters and a composition, thickness, and geometry of an energy transfer medium based on a composition of the one or more particle(s) to be removed and a composition of the substrate, the energy deposition into at least the energy transfer medium can be controlled so as to remove the one or more particle(s) from the surface while minimizing damage to the substrate. Selecting the composition of energy transfer medium includes, for example, selecting the components of the energy transfer medium to produce desired optical, chemical and thermophysical properties. Selecting the thickness of the energy transfer medium includes, for example, selecting the amount of energy transfer medium deposited on the particle/substrate system. Selecting the geometry of the energy transfer medium includes, for example, selecting the form of the energy transfer medium upon deposition on the substrate such as a uniform thickness layer, a droplet surrounding the particle(s), and/or absorption of the energy transfer medium into the capillary spaces under the particle(s). The Tam reference fails to disclose or suggest selecting laser energy transfer parameters and the composition, thickness, and geometry of the energy transfer medium based on a composition of the one or more particle(s) to be removed and a composition of the

substrate to control the energy deposition into at least the energy transfer medium to effect removal of the one or more particle(s) from the surface while minimizing damage to the substrate.

More particularly, with respect to independent claim 1, the Tam reference at least fails to disclose or suggest selecting laser energy transfer parameters and a composition, thickness, and geometry of an energy transfer medium based on a composition of the one or more particle(s) to be removed and the composition of the substrate, wherein the laser energy transfer parameters and the composition, thickness, and geometry of the energy transfer medium are selected to control energy deposition into at least the energy transfer medium to effect removal of the one or more particle(s) from the surface while minimizing damage to the substrate, or the combination thereof.

With respect to independent claim 33, the Tam reference at least fails to disclose or suggest adsorbing an energy transfer medium under and around the one or more particle(s) to be removed, wherein a composition, thickness, and geometry of the energy transfer medium are selected based on a composition of the one or more particle(s) to be removed and a composition of the substrate, selecting one or more of the laser wavelength of the laser energy, the length and shape of the laser pulse, the density of the laser energy, the pulse repetition rate of the laser energy, the laser beam size and/or shape, the irradiation geometry, and the ambient conditions, and a composition, thickness, and geometry of the energy transfer medium, to precisely control an energy deposition into at least the energy transfer medium, and absorbing sufficient laser

energy in at least the energy transfer medium to dislodge the one or more particle(s) from the surface while minimizing damage to the substrate, or the combination thereof.

With respect to independent claim 35, the Tam reference at least fails to disclose or suggest determining a tailored composition with a tailored thickness and geometry to serve as an energy transfer medium for the optical radiation source having the optical energy distribution, and determining a tailored optical pulse of the optical radiation source in view of the composition, thickness, and geometry of the energy transfer medium, a surface of a sample, a sample and/or one or more particle(s) to be removed from a sample, such that when the energy transfer medium is arranged on the surface of the sample having the one or more particle(s) and is subsequently irradiated by the optical radiation source, sufficient energy is transferred from the tailored optical pulse to the one or more particle(s) via the energy transfer medium to dislodge said one or more particle(s) from the surface while minimizing damage to the sample, or the combination thereof.

With respect to independent claim 36, the Tam reference at least fails to disclose or suggest tailoring a composition, thickness, and geometry of an energy transfer medium in view of optical properties of the sample and the optical energy distribution, determining a tailored pulse in view of the composition, thickness, and geometry of the energy transfer medium, the optical energy distribution, the surface, the sample and/or the one or more particle(s) to be removed from the sample, and irradiating at least the energy transfer medium with the tailored

pulse thereby dislodging the one or more particle(s) from the surface while minimizing damage to the sample, or the combination thereof.

With respect to independent claim 37, the Tam reference at least fails to disclose or suggest arranging an energy transfer medium having a predetermined composition, thickness, and geometry on a surface of a sample, and irradiating the energy transfer medium with an optical radiation pulse tailored to the one or more particle(s), the sample, and the energy transfer medium such that energy from the tailored optical radiation pulse is absorbed largely by the energy transfer medium but not significantly by the sample causing the one or more particle(s) to be removed from the surface while minimizing damage to the sample, or the combination thereof.

Accordingly, the rejection of independent claims 1, 33, 35, 36, and 37 should be withdrawn. Dependent claims 2-15, 17-31, and 34 are allowable at least for the reasons discussed above with respect to independent claims 1 and 33, from which they respectively depend, as well as for their added features.

The Office Action rejected claim 32 under 35 U.S.C. §103(a) as being unpatentable over the Tam reference in view of Doyel et al. (hereinafter "Doyel"), U.S. Patent No. 6,130,195. The rejection is respectfully traversed.

Doyel fails to overcome the deficiencies of the Tam reference discussed above with respect to independent claim 1, from which claim 32 ultimately depends, as Doyel is merely cited as allegedly teaching the interchangeability of ethanol, methanol, isopropanol and benzyl alcohol.

Accordingly, dependent claim 32 is allowable for the reasons discussed above with respect to independent claim 1, from which it ultimately depends as well as for its added features.

Added claim 66 also defines over the applied references.

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **Carol L. Druzbick**, at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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